FIG. 1

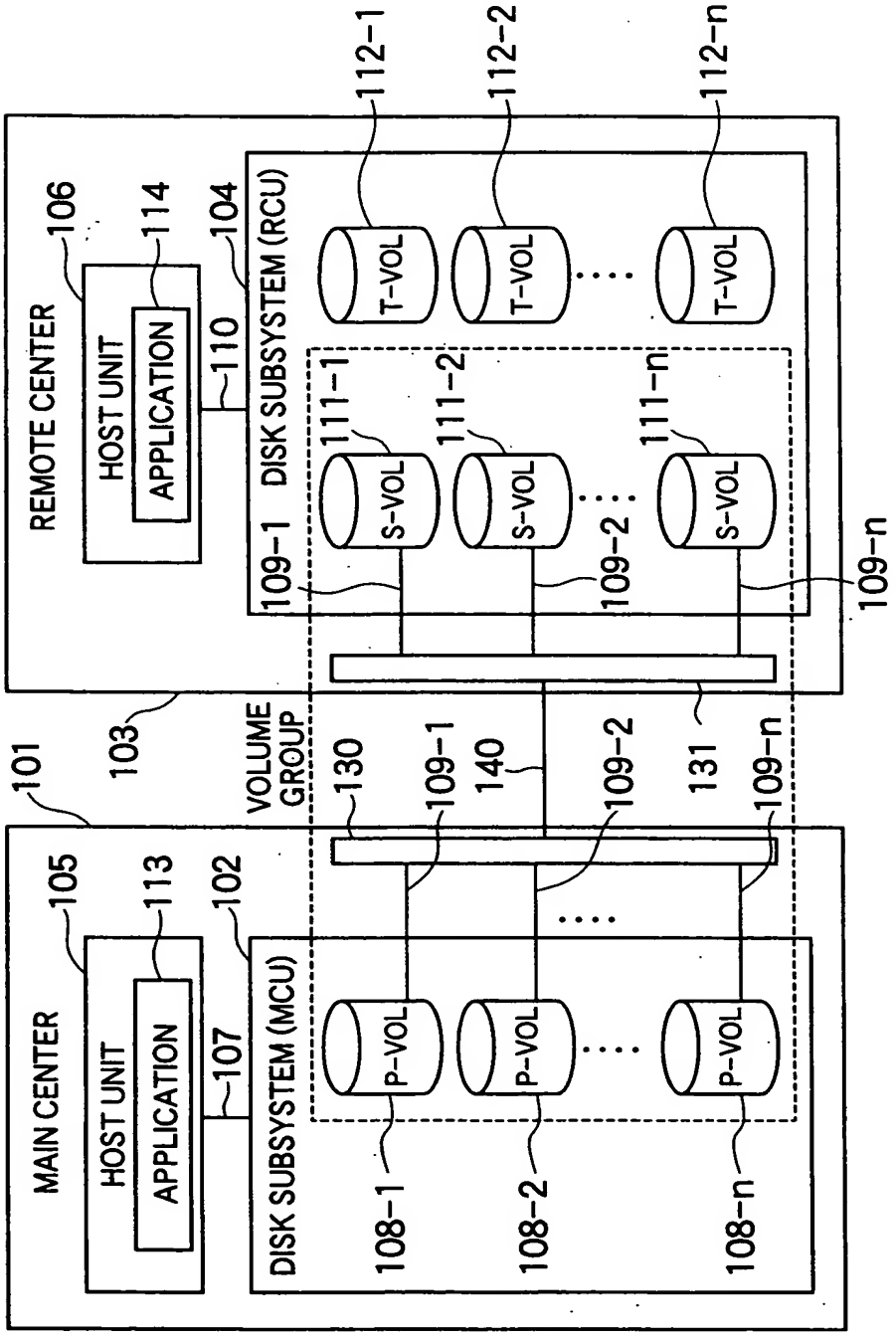
REMOTE CENTER
106
HOST UNIT
APPLICATION
114
110
104
DISK SUBSYSTEM (RCU)
112-1
112-2
112-n
T-VOL
T-VOL
T-VOL
111-1
111-2
111-n
S-VOL
S-VOL
S-VOL
109-1
109-2
109-n
103
VOLUME GROUP
101
130
109-1
140
109-2
131
109-n
MAIN CENTER
105
HOST UNIT
APPLICATION
113
107
102
DISK SUBSYSTEM (MCU)
P-VOL
P-VOL
P-VOL
108-1
108-2
108-n

FIG. 2

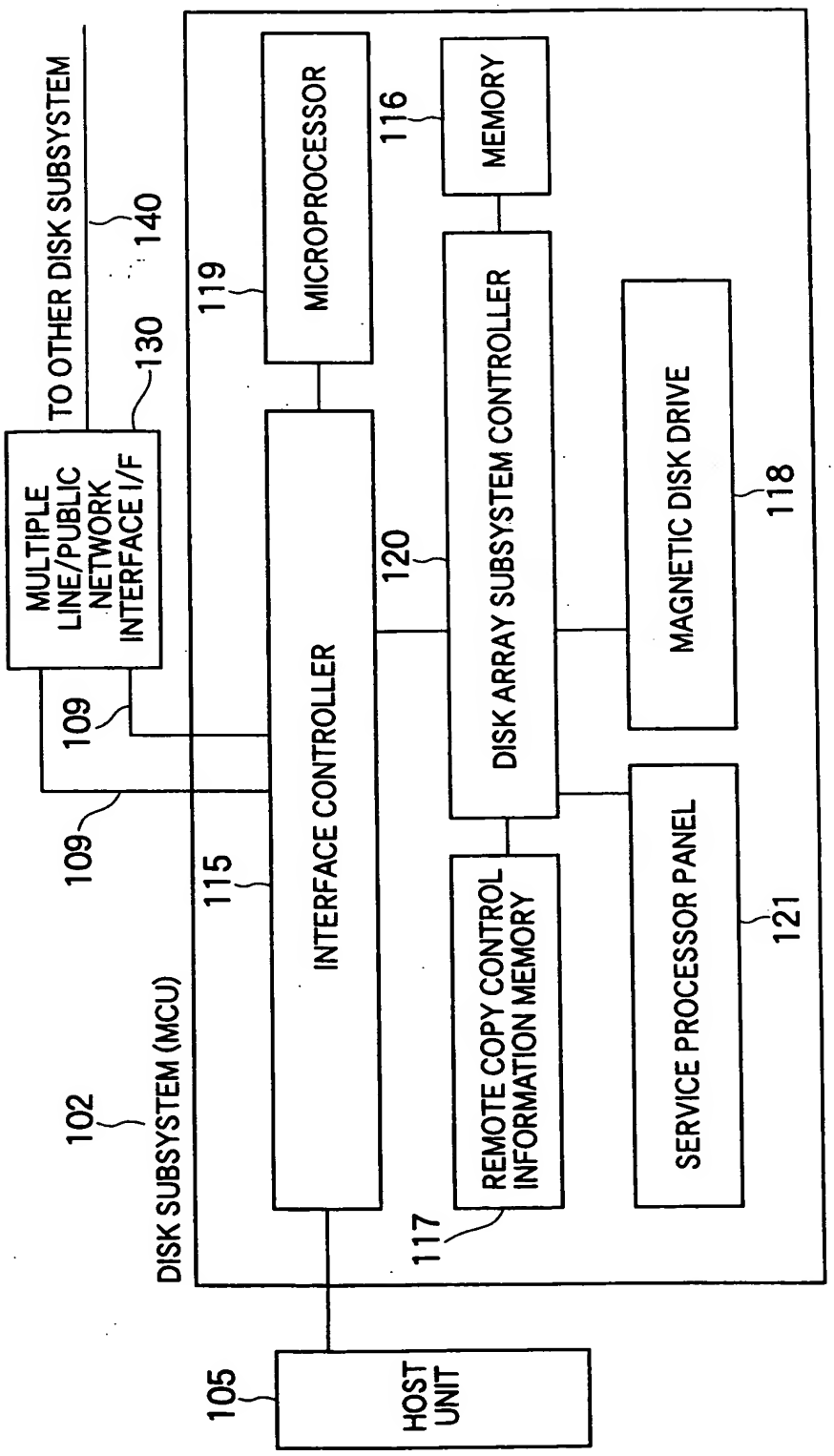
HOST UNIT
105
DISK SUBSYSTEM (MCU)
102
INTERFACE CONTROLLER
115
MICROPROCESSOR
119
MEMORY
116
DISK ARRAY SUBSYSTEM CONTROLLER
120
REMOTE COPY CONTROL INFORMATION MEMORY
117
MAGNETIC DISK DRIVE
118
SERVICE PROCESSOR PANEL
121
MULTIPLE LINE/PUBLIC NETWORK INTERFACE I/F
109
109
130
TO OTHER DISK SUBSYSTEM
140

FIG. 3

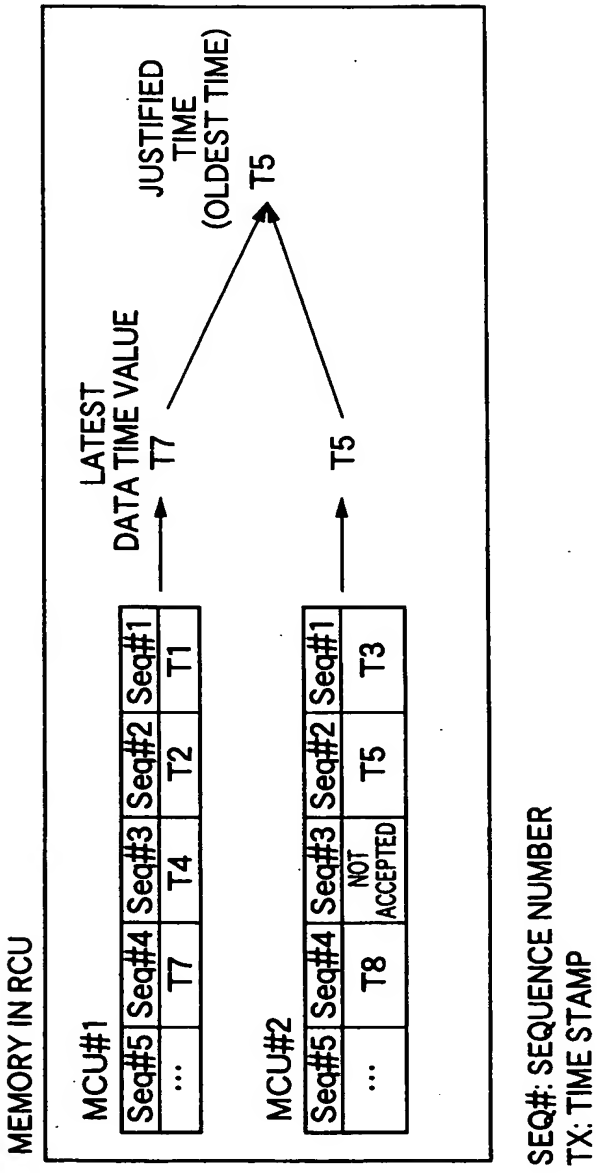
MEMORY IN RCU
MCU#1
Seq#5 Seq#4 Seq#3 Seq#2 Seq#1
... T7 T4 T2 T1
MCU#2
Seq#5 Seq#4 Seq#3 Seq#2 Seq#1
... T8 NOT ACCEPTED T5 T3
LATEST DATA TIME VALUE
T7
T5
JUSTIFIED TIME (OLDEST TIME)
T5
SEQ#: SEQUENCE NUMBER
TX: TIME STAMP

FIG. 4

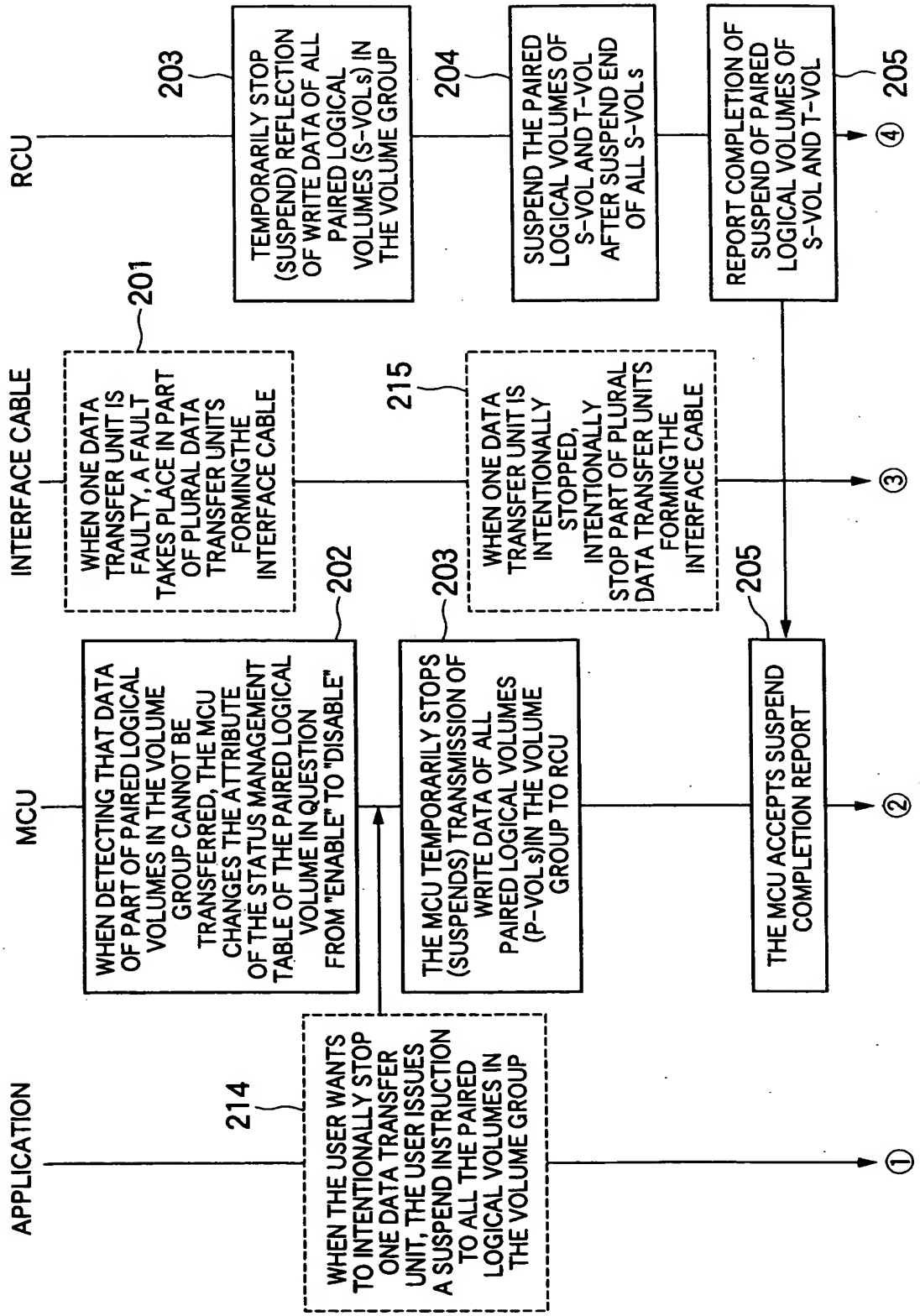
APPLICATION
MCU
INTERFACE CABLE
RCU
214
WHEN THE USER WANTS TO INTENTIONALLY STOP ONE DATA TRANSFER UNIT, THE USER ISSUES A SUSPEND INSTRUCTION TO ALL THE PAIRED LOGICAL VOLUMES IN THE VOLUME GROUP
①
WHEN DETECTING THAT DATA OF PART OF PAIRED LOGICAL VOLUMES IN THE VOLUME GROUP CANNOT BE TRANSFERRED, THE MCU CHANGES THE ATTRIBUTE OF THE STATUS MANAGEMENT TABLE OF THE PAIRED LOGICAL VOLUME IN QUESTION FROM "ENABLE" TO "DISABLE"
202
201
WHEN ONE DATA TRANSFER UNIT IS FAULTY, A FAULT TAKES PLACE IN PART OF PLURAL DATA TRANSFER UNITS FORMINGTHE INTERFACE CABLE
THE MCU TEMPORARILY STOPS (SUSPENDS) TRANSMISSION OF WRITE DATA OF ALL PAIRED LOGICAL VOLUMES (P-VOLs)IN THE VOLUME GROUP TO RCU
203
TEMPORARILY STOP (SUSPEND) REFLECTION OF WRITE DATA OF ALL PAIRED LOGICAL VOLUMES (S-VOLs) IN THE VOLUME GROUP
WHEN ONE DATA TRANSFER UNIT IS INTENTIONALLY STOPPED, INTENTIONALLY STOP PART OF PLURAL DATA TRANSFER UNITS FORMINGTHE INTERFACE CABLE
215
204
SUSPEND THE PAIRED LOGICAL VOLUMES OF S-VOL AND T-VOL AFTER SUSPEND END OF ALL S-VOLs
THE MCU ACCEPTS SUSPEND COMPLETION REPORT
205
REPORT COMPLETION OF SUSPEND OF PAIRED LOGICAL VOLUMES OF S-VOL AND T-VOL
②
③
④

FIG. 5

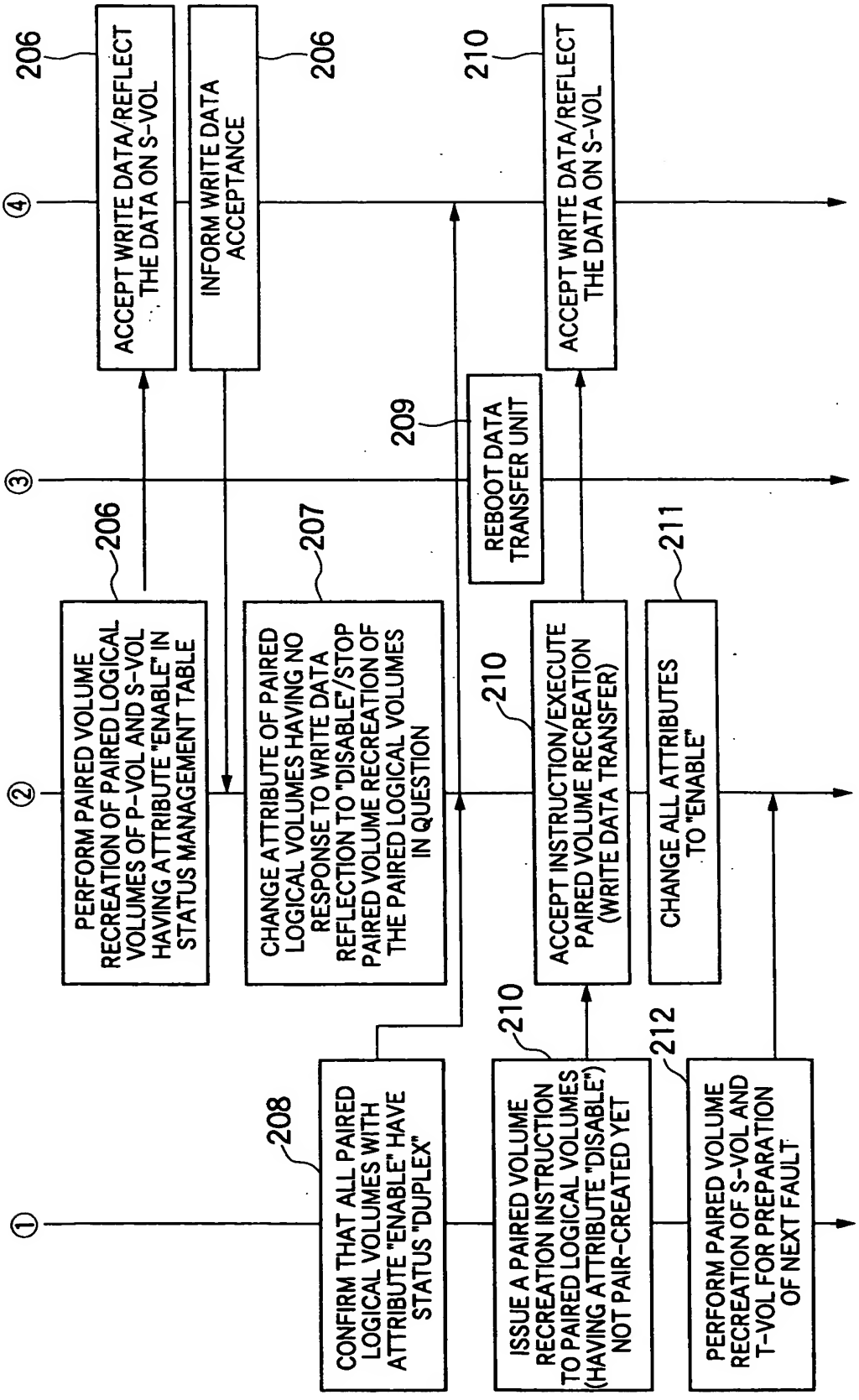
①
②
③
④
208
CONFIRM THAT ALL PAIRED LOGICAL VOLUMES WITH ATTRIBUTE "ENABLE" HAVE STATUS "DUPLEX"
206
PERFORM PAIRED VOLUME RECREATION OF PAIRED LOGICAL VOLUMES OF P-VOL AND S-VOL HAVING ATTRIBUTE "ENABLE" IN STATUS MANAGEMENT TABLE
207
CHANGE ATTRIBUTE OF PAIRED LOGICAL VOLUMES HAVING NO RESPONSE TO WRITE DATA REFLECTION TO "DISABLE"/STOP PAIRED VOLUME RECREATION OF THE PAIRED LOGICAL VOLUMES IN QUESTION
206
INFORM WRITE DATA ACCEPTANCE
206
ACCEPT WRITE DATA/REFLECT THE DATA ON S-VOL
210
ISSUE A PAIRED VOLUME RECREATION INSTRUCTION TO PAIRED LOGICAL VOLUMES (HAVING ATTRIBUTE "DISABLE") NOT PAIR-CREATED YET
209
REBOOT DATA TRANSFER UNIT
210
ACCEPT INSTRUCTION/EXECUTE PAIRED VOLUME RECREATION (WRITE DATA TRANSFER)
210
ACCEPT WRITE DATA/REFLECT THE DATA ON S-VOL
211
CHANGE ALL ATTRIBUTES TO "ENABLE"
212
PERFORM PAIRED VOLUME RECREATION OF S-VOL AND T-VOL FOR PREPARATION OF NEXT FAULT

FIG. 6

Claim 3

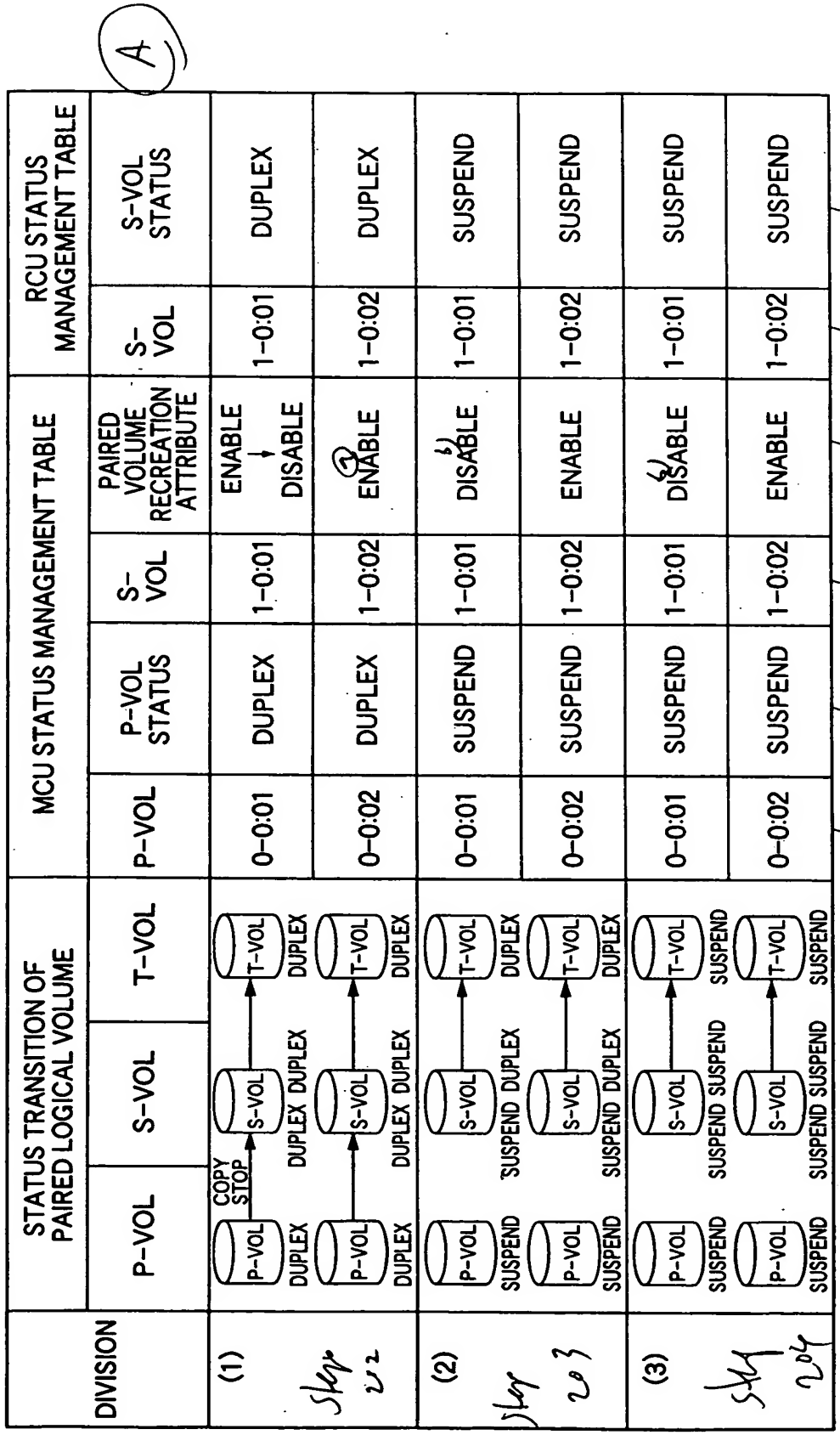
DIVISION
STATUS TRANSITION OF PAIRED LOGICAL VOLUME
P-VOL
S-VOL
T-VOL
MCU STATUS MANAGEMENT TABLE
P-VOL
P-VOL STATUS
S-VOL
PAIRED VOLUME RECREATION ATTRIBUTE
RCU STATUS MANAGEMENT TABLE
S-VOL
S-VOL STATUS
A
(1)
(2)
(3)
COPY STOP
DUPLEX
SUSPEND
SUSPEND SUSPEND
0-0:01
0-0:02
1-0:01
1-0:02
ENABLE → DISABLE
ENABLE
DISABLE
DUPLEX
SUSPEND
601
602
603
604
605
606

FIG. 7

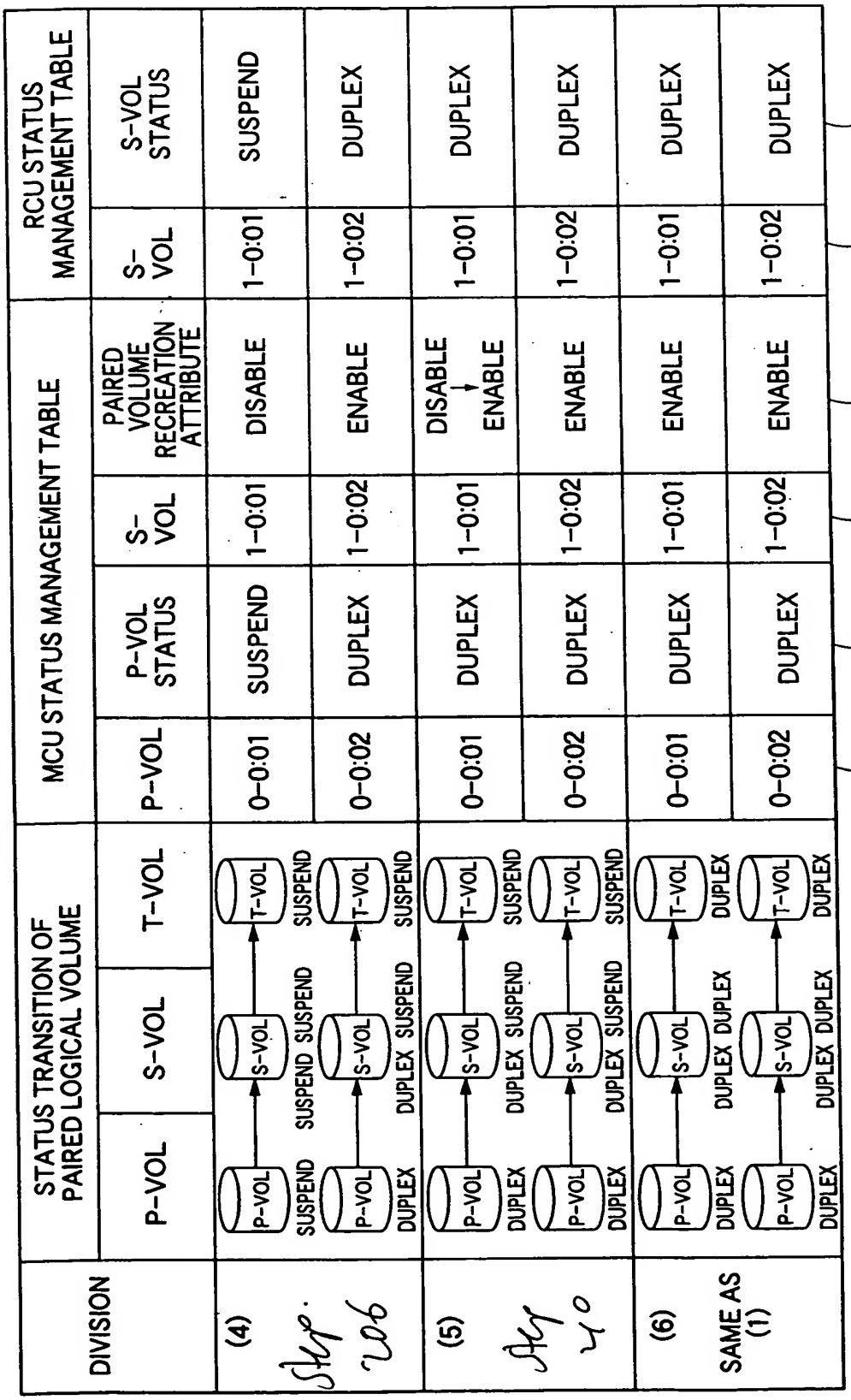
DIVISION
STATUS TRANSITION OF PAIRED LOGICAL VOLUME
P-VOL
S-VOL
T-VOL
MCU STATUS MANAGEMENT TABLE
P-VOL
P-VOL STATUS
S-VOL
PAIRED VOLUME RECREATION ATTRIBUTE
RCU STATUS MANAGEMENT TABLE
S-VOL
S-VOL STATUS
(4)
Step 206
0-0:01
SUSPEND
1-0:01
DISABLE
1-0:01
SUSPEND
0-0:02
DUPLEX
1-0:02
ENABLE
1-0:02
DUPLEX
(5)
Step 40
0-0:01
DUPLEX
1-0:01
DISABLE → ENABLE
1-0:01
DUPLEX
0-0:02
DUPLEX
1-0:02
ENABLE
1-0:02
DUPLEX
(6)
SAME AS (1)
0-0:01
DUPLEX
1-0:01
ENABLE
1-0:01
DUPLEX
0-0:02
DUPLEX
1-0:02
ENABLE
1-0:02
DUPLEX
601
602
603
604
605
606

FIG. 8

VG#=0001		JUSTIFIED TIME = 00:00:00	
P-VOL (MCU#-VOL#)	S-VOL (RCU#-VOL#)	STATUS	PAIRED VOLUME RECREATION ATTRIBUTE
0-0:01	1-0:01	DUPLEX	ENABLE
0-0:02	1-0:02	DUPLEX	ENABLE
0-0:03	1-0:03	SUSPEND	ENABLE
0-0:04	1-0:04	SUSPEND	DISABLE